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CHAUTAUQUA LAKE, CHAUTAUQUA COUNTY, NEW YORK

Pacific Northwest Environmental Research Laboratory

Prepared for:

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16. ABSTRACT
Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

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REPORT
ON
CHAUTAUQUA LAKE
CHAUTAUQUA COUNTY
NEW YORK

EPA REGION II

WORKING PAPER No. 155

WITH THE COOPERATION OF THE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AND THE

NEW YORK NATIONAL GUARD

DECEMBER, 1974

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FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to fresh water lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's fresh water lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U. S. Environmental Protection Agency) expresses sincere appreciation to the New York Department of Environmental Conservation for professional involvement and to the New York National Guard for conducting the tributary sampling phase of the Survey.

Henry L. Diamond, Commissioner of the New York Department of Environmental Conservation, and Leo J. Hetling, Director, and Italo G. Carcich, Senior Sanitary Engineer, Environmental Quality Research, Department of Environmental Conservation, provided invaluable lake documentation and counsel during the Survey.

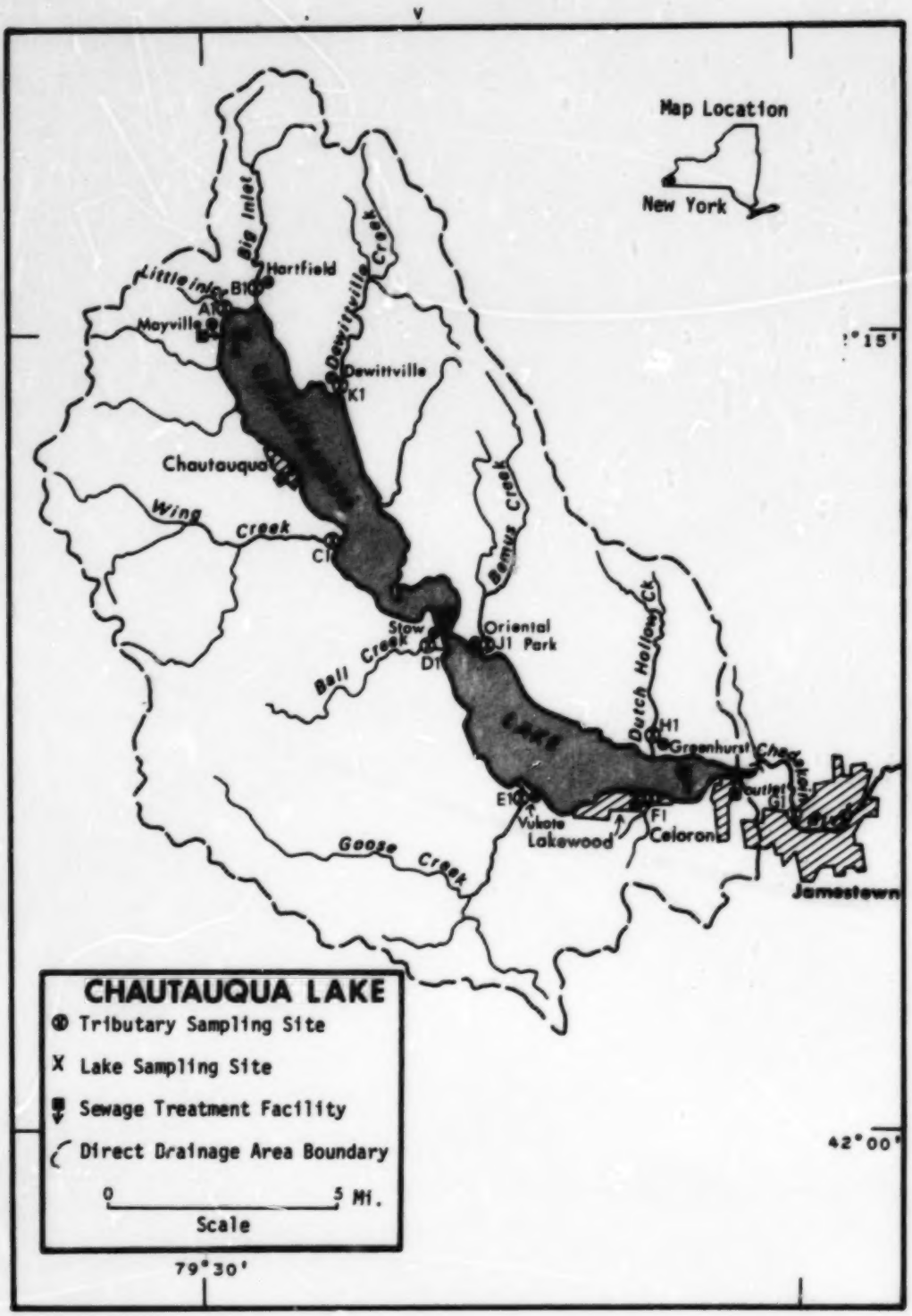
Major General John C. Baker, the Adjutant General of New York, and Project Officer Lieutenant Colonel Fred Peters, who directed the volunteer efforts of the New York National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF NEW YORK

LAKE NAME	COUNTY
Allegheny Reservoir	Cattaraugas, NY; McLean, Warren, PA
Black	St. Lawrence
Canadaigua	Ontario
Cannonsville	Delaware
Carry Falls	St. Lawrence
Cassadaga	Chautauqua
Cayuga	Seneca, Tompkins
Champlain	Clinton, Essex, NY; Addison, Chittenden, Franklin, VT
Chautauqua	Chautauqua
Conesus	Livingston
Cross	Cayuga, Onondaga
Goodyear	Otsego
Huntington	Sullivan
Keuka	Ontario
Long	Hamilton
Lower St. Regis	Franklin
Otter	Cayuga
Owasco	Cayuga
Raquette Pond	Franklin
Round	Saratoga
Sacandaga Res.	Fulton, Saratoga
Saratoga	Saratoga
Schroon	Essex, Warren
Seneca	Seneca, Schyler, Yates
Swan	Sullivan
Swinging Bridge Res.	Sullivan


Map Location
New York
Big Inlet
Little Inlet
Hartfield
Mayville
Dewittville Creek
Dewittville
K1
Chautauqua
Wing Creek
Bemus Creek
Stow
Bell Creek
Oriental
J1 Park
Dutch Hollow Ck
H1
Greenhurst
Outlet
G1
E1
Vukote
Lakewood
F1
Celoron
Jamestown
Goose Creek
79°30'
42°00'
CHAUTAUQUA LAKE
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Facility
Direct Drainage Area Boundary
0
5 Mi.
Scale

CHAUTAUQUA LAKE

STORET NO. 3610

I. CONCLUSIONS

A. Trophic Condition:

Survey data indicate that Chautauqua Lake is eutrophic. Of the 26 New York lakes on which sampling was completed, 18 had less mean total phosphorus, 16 had less mean dissolved phosphorus, but none had less mean inorganic nitrogen. Nineteen of the lakes had less mean chlorophyll a, and 17 had greater Secchi disc transparency.

B. Rate-Limiting Nutrient:

The results of the algal assay indicate that Chautauqua Lake was limited by nitrogen at the time the assay sample was collected. Nitrogen-to-phosphorus ratios in the lake confirm the assay results.

C. Nutrient Controllability:

During the sampling year, there was an unexpected apparent loss of both phosphorus and nitrogen from Chautauqua Lake; i.e., about 17% more phosphorus (5,680 pounds) and 12% more nitrogen (84,230 pounds) were measured leaving the lake than can be accounted for by all measured and estimated inputs (see pages 13 and 14).

The cause of the marked nutrient imbalance is not known, but it is unlikely that a nutrient "wash-out" occurred or that

a direct-discharge point source of that magnitude was overlooked. Whatever the reason, the nutrient imbalance noted above points to a need for a more detailed study before a final assessment of the controllability of nutrients is made.

However, considering only the nutrient inputs, it is calculated that about 53% of the total phosphorus loads and 11% of the total nitrogen input to Chautauqua Lake originated from the four wastewater treatment plants which discharge to the lake.

Although a significant part of the phosphorus input to the lake could be controlled by advanced waste treatment or diversion of waste effluents, primary production in the lake apparently is now limited by the availability of nitrogen. Theoretically, if phosphorus loadings were sufficiently reduced, a phosphorus limited condition could be attained and the eutrophication rate of the lake could be reduced.

According to sources outside the survey (Hetling, 1974), Chautauqua Lake currently supports an excellent fishery, most notably for muskellunge. At the same time, in certain areas of the lake, excessive aquatic weed growths and phytoplankton blooms interfere with the aesthetic and non-fishery recreational values of the lake.

In this case of apparent conflict between lake uses, the more detailed studies referred to above should include a determination of the optimum level of nutrient input to satisfy the needs of the most important lake uses.

II. LAKE AND DRAINAGE BASIN CHARACTERISTICS

A. Lake Morphometry†:

1. Surface area: 14,134 acres.
2. Mean depth: 22.7 feet.
3. Maximum depth: 77 feet.
4. Volume: 328,566 acre/feet.
5. Mean hydraulic retention time: 1.4 years.

B. Tributary and Outlet:
(See Appendix A for flow data)

1. Tributaries -

Name	Drainage area*	Mean flow*
Little Inlet	2.0 mi^2	3.4 cfs
Big Inlet	10.7 mi^2	18.0 cfs
Wing Creek	23.3 mi^2	40.0 cfs
Ball Creek	9.1 mi^2	7.6 cfs
Goose Creek	31.6 mi^2	53.4 cfs
Unnamed Creek (F-1)	1.5 mi^2	1.2 cfs
Dutch Hollow Creek	6.3 mi^2	11.0 cfs
Bemus Creek	12.2 mi^2	21.0 cfs
Dewittville Creek	12.6 mi^2	20.8 cfs
Minor tributaries & immediate drainage -	57.6 mi^2	146.8 cfs
Totals	166.9 mi^2	323.2 cfs

2. Outlet -

Chadakoin River	189.0 mi^2**	323.2 cfs**

† Anonymous, 1972; includes upper and lower Chautaugua Lake.
* Drainage areas are accurate within ±5%, except for small basins (±10%); mean daily flows are accurate within ±5 to 25%; and normalized mean monthly flows are accurate within ±15%.
** Includes area of lake; outflow adjusted to equal sum of inflows.

C. Precipitation*:

1. Year of sampling: 33.8 inches.

2. Mean annual: 32.5 inches.

* See Working Paper No. 1, "Survey Methods".

III. LAKE WATER QUALITY SUMMARY

Chautauqua Lake was sampled three times during the open-water season of 1972 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from three stations on the lake and from a number of depths at each station (see map, page v). During each visit, a single depth-integrated (near bottom to surface) sample was composited from the stations for phytoplankton identification and enumeration; and during the last visit, a single five-gallon depth-integrated sample was composited for algal assays. Also each time, a depth-integrated sample was collected from each of the stations for chlorophyll a analysis. The maximum depths sampled were 10 feet at station 1, 16 feet at station 2, and 15 feet at station 3.

The results obtained are presented in full in Appendix B, and the data for the fall sampling period, when the lake was essentially well-mixed, are summarized below. Note, however, the Secchi disc summary is based on all values.

For differences in the various parameters at the other sampling times, refer to Appendix B.

A. Physical and chemical characteristics:

FALL VALUES

(10/12/72)

Parameter	Minimum	Mean	Median	Maximum
Temperature (Cent.)	11.7	13.0	12.9	13.8
Dissolved oxygen (mg/l)	8.7	9.2	9.1	9.8
Conductivity (μmhos)	160	162	160	167
pH (units)	8.0	8.1	8.1	8.1
Alkalinity (mg/l)	48	50	50	53
Total P (mg/l)	0.025	0.052	0.041	0.110
Dissolved P (mg/l)	0.013	0.016	0.015	0.022
NO_2 + NO_3 (mg/l)	0.030	0.046	0.050	0.060
Ammonia (mg/l)	0.040	0.056	0.055	0.070

ALL VALUES

Secchi disc (inches)	35	79	78	132

B. Biological characteristics:

1. Phytoplankton -

Sampling Date	Dominant Genera	Number per ml
05/25/72	1. Dinobryon	753
	2. Flagellates	205
	3. Cyclotella	193
	4. Fragilaria	96
	5. Melosira	60
	Other genera	266
	Total	1,573
07/27/72	1. Dictyosphaerium	2,500
	2. Schroederia	964
	3. Fragilaria	392
	4. Cyclotella	361
	5. Cryptomonas	211
	Other genera	964
	Total	5,392
10/12/72	1. Flagellates	512
	2. Gomphosphaeria	502
	3. Dinobryon	261
	4. Melosira	191
	5. Anabaena	161
	Other genera	662
	Total	2,289

2. Chlorophyll *a* -
(Because of instrumentation problems during the 1972 sampling, the following values may be in error by plus or minus 20 percent.)

Sampling Date	Station Number	Chlorophyll *a* (µg/l)
05/26/72	01	8.5
	02	4.2
	03	4.7
07/27/72	01	35.3
	02	6.5
	03	12.1
10/12/72	01	20.4
	02	20.4
	03	7.3

C. Limiting Nutrient Study:

1. Autoclaved, filtered, and nutrient spiked -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.029	0.113	5.4
0.01 P	0.039	0.113	5.1
0.02 P	0.049	0.113	5.6
0.05 P	0.079	0.113	5.3
0.05 P + 5.0 N	0.079	5.113	31.3
0.05 P + 10.0 N	0.079	10.113	37.4
10.0 N	0.029	10.113	18.3

2. Discussion -

The control yield of the assay alga, *Selenastrum capricornutum*, indicates that the potential primary productivity of Chautauqua Lake was moderately high at the time the sample was collected. Also, the lack of significant change in yields with increased levels of orthophosphorus, until nitrogen was also added, shows that the lake was nitrogen limited

when sampled. Note that the addition of only nitrogen resulted in a yield greater than the control yield.

Nitrogen limitation is also indicated by the lake data at each sampling time; i.e., nitrogen to phosphorus ratios were less than 9 to 1 on all occasions, and nitrogen limitation would be expected.

IV. NUTRIENT LOADINGS
(See Appendix C for data)

For the determination of nutrient loadings, the New York National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page v), except for the high runoff months of April and May when two samples were collected. Sampling was begun in November, 1972, and was completed in October, 1973.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the New York District Office of the U.S. Geological Survey for the tributary sites nearest the lake.

In this report, nutrient loads for sampled tributaries were determined by using a modification of a U.S. Geological Survey computer program for calculating stream loadings*. Nutrient loadings for unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated by using the means of the nutrient loads, in $lbs/mi^2/year$, at stations B-1, C-1, D-1, E-1, F-1, H-1, J-1, and K-1 and multiplying the means by the ZZ area in mi^2.

The operators of the Lakewood, Chautauqua Institute, and Mayville wastewater treatment plants provided monthly effluent samples and corresponding flow data. However, the Village of Celoron did not participate in the Survey, and nutrient loads there were estimated at 2.5 lbs P and 7.5 lbs N/capita/year.

* See Working Paper No. 1.

The Little Inlet was sampled at station A-1 during the Survey year. However, nutrient concentrations were so high (e.g., mean total P = 1.946 mg/l) that the suitability of the sampling site was questionable. Therefore, the drainage area of the Little Inlet was included in the ZZ area, and loads were estimated as discussed above. Note that at the concentrations measured, the calculated non-point export load of this stream would have been in excess of 6,000 pounds of phosphorus per square mile of drainage for the year as compared to the mean export of all of the other sampled streams (F about 81 lbs/mi^2/yr (see page 15).

A. Waste Sources:

1. Known municipal -

Name	Pop. Served†	Treatment	Mean Flow (mgd)	Receiving Water
Lakewood	3,864	Prim. clarifier	0.633	Chautauqua Lake
Mayville	1,567	Prim. clarifier	0.182	Chautauqua Lake
Chautauqua Institute	5,850*	Prim. clarifier	0.585	Chautauqua Lake
Celoron	1,456	Prim. clarifier	0.146**	Chautauqua Lake

2. Known industrial - None

† 1970 Census.
* Population estimated on basis of measured flow at 100 gal/capita/day.
** Estimated at 100 gal/capita/day.

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

Source	lbs P/ yr	% of total
a. Tributaries (non-point load) -		
Big Inlet	1,050	3.1
Wing Creek	2,580	7.5
Ball Creek	230	0.7
Goose Creek	3,080	9.0
Unnamed Creek (F-1)	210	0.6
Dutch Hollow Creek	610	1.8
Bemus Creek	390	1.1
Dewittville Creek	600	1.7
b. Minor tributaries & immediate drainage (non-point load) -	4,830	14.1
c. Known municipal -		
Lakewood	8,380	24.4
Mayville	2,200	6.4
Chautauqua Institute	3,890	11.3
Celoron	3,640	10.6
d. Septic tanks* -	450	1.3
e. Known industrial - None	-	-
f. Direct precipitation** -	2,200	6.4
Total	34,340	100.0

2. Outputs -

Lake outlet - Chadakoin River 40,020

3. Net annual P loss - 5,680 pounds

* Based on 717 dwellings within 100 yards of lake, including camps; see Working Paper No. 1.
** See Working Paper No. 1.

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

Source	lbs N/ yr	% of total
a. Tributaries (non-point load) -		
Big Inlet	33,940	5.0
Wing Creek	65,880	9.8
Ball Creek	11,740	1.7
Goose Creek	83,080	12.3
Unnamed Creek (F-1)	3,020	0.4
Dutch Hollow Creek	18,030	2.7
Bemus Creek	27,130	4.0
Dewittville Creek	47,360	7.0
b. Minor tributaries & immediate drainage (non-point load) -	154,780	22.9
c. Known municipal -		
Lakewood	35,820	5.3
Mayville	11,310	1.7
Chautauqua Institute	19,190	2.8
Celoron	10,920	1.6
d. Septic tanks* -	16,850	2.5
e. Known industrial - None	-	-
f. Direct precipitation** -	136,170	20.2
Total	675,220	100.0

2. Outputs -

Lake outlet - Chadakoin River 759,450

3. Net annual N loss - 84,230 pounds

* Based on 717 dwellings with 100 yards of lake, including camps; see Working Paper No. 1.
** See Working Paper No. 1.

D. Mean Annual Non-point Nutrient Export by Subdrainage Area:

Tributary	lbs P/mi^2/yr	lbs N/mi^2/yr
Big Inlet	98	3,172
Wing Creek	111	2,827
Ball Creek	25	1,290
Goose Creek	97	2,629
Unnamed Creek (F-1)	140	2,013
Dutch Hollow Creek	97	2,862
Bemus Creek	32	2,224
Dewittville Creek	48	3,759

E. Yearly Loading Rates:

In the following table, the existing phosphorus loading rates are compared to those proposed by Vollenweider (in press). Essentially, his "dangerous" rate is the rate at which the receiving waters would become eutrophic or remain eutrophic; his "permissible" rate is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic rate would be considered one between "dangerous" and "permissible".

	Total Phosphorus		Total Nitrogen	
Units	Total	Accumulated	Total	Accumulated
lbs/acre/yr	2.4	loss	47.8	loss
grams/m^2/yr	0.27	-	5.4	-

Vollenweider loading rates for phosphorus ($g/m^2/yr$) based on mean depth and mean hydrualic retention time of Chautauqua Lake:

"Dangerous" (eutrophic rate)	0.44
"Permissible" (oligotrophic rate)	0.22

V. LITERATURE REVIEWED

Anonymous, 1972. Chautauqua Lake studies - A preliminary report. Lake Erie Env. Studies Prog., State U. Coll. at Fredonia.

Hetling, Leo J., 1974. Personal communication (Chautauqua Lake fishery and problems). NY Dept. Env. Cons., Albany.

Vollenweider, Richard A., (in press). Input-output models. Schweiz. A. Hydrol.

VII. APPENDICES

APPENDIX A

TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR NEW YORK 11/26/74

LAKE CODE 3A10 CHAUTAUQUA LAKE

TOTAL DRAINAGE AREA OF LAKE 149.00

TRIBUTARY	SUB-DRAINAGE AREA	NORMALIZED FLOWS JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
3610A1	2.00	4.00	4.30	8.20	7.10	3.60	2.10	1.10	0.90	1.10	1.40	2.50	4.00	3.35
3610B1	10.70	22.00	23.00	44.00	39.00	19.00	11.00	6.00	4.60	5.70	7.30	13.00	22.00	18.02
3610C1	23.30	52.00	54.00	98.00	84.00	40.00	23.00	12.00	8.00	12.00	16.00	31.00	50.00	39.98
3610D1	9.11	9.40	10.00	19.00	16.00	7.60	4.40	2.30	1.70	2.30	3.00	5.00	9.40	7.59
3610E1	31.60	70.00	73.00	130.00	110.00	54.00	32.00	16.00	12.00	16.00	21.00	41.00	67.00	53.30
3610F1	1.52	1.50	1.60	3.00	2.50	1.20	0.60	0.30	0.30	0.30	0.40	0.90	1.50	1.17
3610G1	189.00	480.00	510.00	690.00	670.00	310.00	180.00	96.00	77.00	110.00	150.00	230.00	410.00	324.00
3610H1	4.32	14.30	15.00	27.00	23.00	11.00	6.40	3.30	2.40	3.30	4.30	8.40	14.00	10.98
3610J1	12.20	29.00	30.00	51.00	43.00	20.00	12.00	5.50	3.80	6.00	7.90	17.00	27.00	20.96
3610K1	12.60	27.00	28.00	51.00	44.00	21.00	12.00	6.30	4.60	6.30	8.20	16.00	26.00	20.82
3610Z7	79.65	190.00	200.00	360.00	310.00	150.00	86.00	44.00	33.00	44.00	58.00	110.00	180.00	146.75

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 189.00
SUM OF SUB-DRAINAGE AREAS = 189.00

TOTAL FLOW IN = 3884.00
TOTAL FLOW OUT = 3913.00

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
3A10A1	11	72	0.50	5	0.80				
	12	72	6.00	3	2.50				
	1	73	3.40	7	3.60				
	2	73	3.20	4	6.30				
	3	73	7.00	4	5.60				
	4	73	3.20	8	5.20				
	5	73	5.10	6	7.10	20	3.40		
	6	73	1.60	3	2.70				
	7	73	0.50	7	0.70				
	8	73	0.80	5	0.50				
	9	73	0.50	9	0.50				
	10	73	2.00	14	1.30				
361091	11	72	32.00	5	54.00				
	12	72	40.00	3	22.00				
	1	73	22.00	7	16.00				
	2	73	21.00	4	41.00				
	3	73	44.00	4	120.00				
	4	73	25.00	8	39.00	22	10.00		
	5	73	16.00	6	22.00	20	11.00		
	6	73	3.20	3	5.60				
	7	73	1.10	7	1.50				
	8	73	1.50	5	1.10				
	9	73	1.00	9	1.10				
	10	73	1.20	14	0.80				

TRIBITARY FLOW INFORMATION FOR NEW YORK 11/26/74

LAKE CODE 3610 CHAUTAUQUA LAKE

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
3610C1	11	72	75.00	5	100.00				
	12	72	90.00	3	45.00				
	1	73	50.00	7	46.00				
	2	73	47.00	4	110.00				
	3	73	99.00	4	190.00				
	4	73	54.00	8	95.00	22	22.00		
	5	73	44.00	6	48.00	20	30.00		
	6	73	15.00	3	27.00				
	7	73	4.80	7	7.00				
	8	73	6.40	5	4.90				
	9	73	4.60	9	5.40				
3610D1	11	72	14.00	5	19.00				
	12	72	17.00	3	8.40				
	1	73	9.50	7	8.70				
	2	73	8.70	3	31.00				
	3	73	19.00	4	36.00				
	4	73	10.00	8	18.00	22	4.20		
	5	73	6.30	6	9.10	20	4.30		
	6	73	2.00	3	3.40				
	7	73	0.60	7	0.90				
	8	73	0.80	5	0.60				
	9	73	0.60	9	0.70				
	10	73	0.80	14	0.50				
3610E1	11	72	99.00	5	130.00				
	12	72	120.00	3	60.00				
	1	73	68.00	7	62.00				
	2	73	64.00	3	230.00				
	3	73	130.00	4	260.00				
	4	73	71.00	8	130.00	22	29.00		
	5	73	60.00	6	85.00	20	30.00		
	6	73	28.00	3	24.00				
	7	73	8.50	7	6.40				
	8	73	12.00	5	8.90				
	9	73	7.70	9	9.50				
	10	73	11.00	14	6.50				
3610F1	11	72	2.20	5	2.80				
	12	72	2.70	3	1.30				
	1	73	1.50	7	1.30				
	2	73	1.50	3	4.90				
	3	73	3.00	4	5.80				
	4	73	1.60	8	2.80	22	0.70		
	5	73	1.30	6	1.90	20	0.90		
	6	73	0.50	3	1.00				
	7	73	0.20	7	0.20				
	8	73	0.30	5	0.10				
	9	73	0.10	9	0.10				
	10	73	0.30	14	0.10				

TRIBUTARY FLOW INFORMATION FOR NEW YORK 11/26/74

LAKE CODE 3610 CHAUTAUQUA LAKE

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
3610G1	11	72	651.00	5	589.00				
	12	72	678.00	3	552.00				
	1	73	560.00	7	695.00				
	2	73	505.00	3	519.00				
	3	73	908.00	4	1600.00				
	4	73	430.00	8	830.00	22	191.00		
	5	73	336.00	6	351.00	20	278.00		
	6	73	269.00	3	518.00				
	7	73	60.00	7	58.00				
	8	73	52.00	5	37.00				
	9	73	89.00	9	168.00				
	10	73	47.00	14	47.00				
3610H1	11	72	20.00	5	27.00				
	12	72	25.00	3	12.00				
	1	73	14.00	7	13.00				
	2	73	13.00	4	29.00				
	3	73	27.00	4	53.00				
	4	73	15.00	8	26.00	22	6.00		
	5	73	9.10	6	13.00	20	4.10		
	6	73	1.40	3	2.50				
	7	73	0.40	7	0.60				
	8	73	0.60	5	0.40				
	9	73	0.40	9	0.50				
	10	73	0.60	14	0.30				
3610J1	11	72	41.00	5	41.00				
	12	72	48.00	3	21.00				
	1	73	28.00	7	30.00				
	2	73	26.00	4	64.00				
	3	73	52.00	4	57.00				
	4	73	28.00	8	54.00	22	11.00		
	5	73	17.00	6	24.00	20	7.50		
	6	73	2.70	3	4.50				
	7	73	0.70	7	1.10				
	8	73	0.90	5	0.70				
	9	73	0.80	9	0.90				
	10	73	1.00	14	0.60				
3610K1	11	72	39.00	5	52.00				
	12	72	47.00	3	23.00				
	1	73	26.00	7	24.00				
	2	73	24.00	4	55.00				
	3	73	52.00	4	100.00				
	4	73	29.00	8	50.00	22	12.00		
	5	73	23.00	6	33.00	20	16.00		
	6	73	11.00	3	19.00				
	7	73	3.40	7	4.90				
	8	73	4.50	5	3.40				
	9	73	3.20	9	3.70				
	10	73	4.20	14	2.50				

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TRIBUTARY FLOW INFORMATION FOR NEW YORK 11/26/74

LAKE CODE 3610 CHAUTAUQUA LAKE

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
3610ZZ	11	72	270.00						
	12	72	320.00						
	1	73	180.00						
	2	73	170.00						
	3	73	370.00						
	4	73	200.00						
	5	73	170.00						
	6	73	76.00						
	7	73	23.00						
	8	73	32.00						
	9	73	23.00						
	10	73	30.00						

21

APPENDIX B

PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 74/11/26

361001
42 06 26.0 079 17 47.0
CHAUTAUQUA LAKE
36 NEW YORK

11EPALES
3

2111202
0008 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00630 NO2&NO3 N-TOTAL MG/L	00610 NH3-N TOTAL MG/L	00665 PHOS-TOT MG/L P	00666 PHOS-DIS MG/L P
72/05/26	17 00	0000	20.4	9.0	108	135	8.90	47	0.020	0.030	0.018	0.008
	17 00	0010	18.9	9.0		130	8.40	48	0.030	0.060	0.033	0.013
72/07/27	18 35	0000			49	145	8.00	54	0.040	0.080	0.037	0.023
	18 35	0004	23.3	9.4		150	7.90	40	0.180	0.060	0.038	0.013
72/10/12	15 00	0000			35	160	8.10	48	0.060	0.070	0.093	0.014
	15 00	0004	11.7	9.8		160	8.12	49	0.060	0.070	0.110	0.022

RJW

DATE FROM TO	TIME OF DAY	DEPTH FEET	32217 CHLRPHYL A UG/L
72/05/26	17 00	0000	8.5J
72/07/27	18 35	0000	35.3J
72/10/12	15 00	0000	20.4J

J VALUE KNOWN TO BE IN ERROR

STORET RETRIEVAL DATE 74/11/26

351002
42 24 37.0 079 23 58.0
CHAUTAUQUA LAKE
36 NEW YORK

11EPALES
3

2111202
0020 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00630 NO2&NO3 N-TOTAL MG/L	00610 NH3-N TOTAL MG/L	00665 PHOS-TOT MG/L P	00666 PHOS-DIS MG/L P
72/05/26	17	32 0000	19.1	8.2	132	140	8.50	46	0.030	0.040	0.028	0.006
	17	32 0010	12.3	5.8		140	7.20	49	0.030	0.060	0.024	0.010
72/07/27	18	55 0000			76	150	7.80	54	0.040	0.060	0.025	0.012
	18	55 0004	24.1	7.0		145	7.80	55	0.040	0.060	0.025	0.014
	18	55 0015	23.4	5.9		150	7.50	57	0.030	0.210	0.041	0.031
72/10/12	15	20 0000			37	160	8.10	50	0.050	0.060	0.047	0.013
	15	20 0004	12.4	9.1		165	8.12	50	0.050	0.060	0.035	0.014
	15	20 0015	12.4	8.9		167	8.08	49	0.050	0.050	0.056	0.015

48

DATE FROM TO	TIME OF DAY	DEPTH FEET	32217 CHLRPHYL A UG/L
72/05/26	17	32 0000	4.2J
72/07/27	18	55 0000	6.5J
72/10/12	15	20 0000	20.4J

J VALUE KNOWN TO BE IN ERROR

STORET RETRIEVAL DATE 74/11/26

361003
42 14 46.0 079 29 15.0
CHAUTAUQUA LAKE
36 NEW YORK

11EPALES 2111202
3 0008 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00630 NO2&NO3 N-TOTAL MG/L	00610 NH3-N TOTAL MG/L	00665 PHOS-TOT MG/L P	00666 PHOS-DIS MG/L P
72/05/26	18 00	0000	12.0	10.0	96	150	8.60	46	0.020	0.020	0.015	0.007
	18 00	0005	17.9	10.0		145	8.60	46	0.020	0.020	0.015	0.006
72/07/27	19 15	0000			96	170	8.00	49	0.030	0.040	0.013	0.007
	19 15	0004	21.9	8.2		150	7.90	48	0.020	0.030	0.016	0.010
72/10/12	15 40	0000			78	160	8.05	49	0.030	0.040	0.025	0.017
	15 40	0004	13.8	9.4		160	8.05	50	0.040	0.050	0.025	0.016
	15 40	0015	13.8	8.7		160	8.00	53	0.030	0.050	0.028	0.016

DATE FROM TO	TIME OF DAY	DEPTH FEET	32217 CHLRPHYL A UG/L
72/05/26	18 00	0000	4.7J
72/07/27	19 15	0000	12.1J
72/10/12	15 40	0000	7.3J

J VALUE KNOWN TO BE IN ERROR

APPENDIX C

TRIBUTARY and WASTEWATER TREATMENT PLANT DATA

STORET RETRIEVAL DATE 74/11/26

3610A1 LS3610A1
42 15 30.0 079 29 30.0
LITTLE INLET
36013 7.5 HARTFIELD
I/CHAUTAUQUA LAKE
BRD IN MAYVILLE
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/05	10 35		0.150	0.950	0.380	0.415	0.690
72/12/03	09 30		0.230	1.400	0.610	0.800	0.990
73/01/07	09 20		0.280	1.380	0.660	0.810	0.900
73/02/04	09 15		0.260	0.760	0.300	0.330	0.380
73/03/04	09 30		0.450	0.340	0.031	0.006	0.065
73/04/08	08 30		0.160	1.050	0.410	0.480	0.540
73/04/22	10 30		0.110	4.400	2.700	2.700	3.000
73/05/06	09 15		0.100	1.470	0.640	0.840	0.970
73/05/20	07 34		0.147	2.200	1.040	1.300	1.400
73/06/03	08 30		0.105	3.200	0.780	0.820	0.960
73/07/07	10 10		0.018	5.300	1.260	4.200	5.100
73/09/09	09 30		0.220	5.000	2.500	2.700	3.300
73/10/14	10 00		0.150	9.400	0.130	5.880	7.000

STORET RETRIEVAL DATE 74/11/26

3610R1 LS3610R1
42 16 00.0 079 28 30.0
BIG INLET
36 7.5 HARTFIELD
1/CHAUTAUQUA
ST HWY 17 BRDG IN HARTFIELD
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/05	10 45		0.221	0.350	0.070	0.010	0.021
73/01/07	09 50		0.620	0.340	0.044	0.006	0.017
73/02/04	09 30		0.440	0.560	0.031	0.010	0.030
73/03/04	10 00		0.650	0.460	0.054	0.010	0.060
73/04/09	08 50		0.336	0.240	0.039	0.005K	0.020
73/04/22	10 35		0.440	0.300	0.046	0.017	0.030
73/05/06	09 21		0.270	0.330	0.029	0.010	0.015
73/05/20	07 43		0.290	0.370	0.017	0.012	0.020
73/06/03	08 45		0.149	2.400	0.091	0.005K	0.030
73/07/07	10 15		0.490	0.780	0.072	0.011	0.030
73/09/04	09 50		0.086	1.050	0.120	0.025	0.060
73/10/14	10 45		0.016	0.850	0.022	0.039	0.055

K VALUE KNOWN TO BE LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

3610C1 LS3610C1
42 11 00.0 079 32 00.0
WING CREEK
36 7.5 CHAUTAUQUA
T/CHAUTAUQUA LAKE
BANK OF RD OF ST HWY 17T BELO HATCHERY
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/05	09 56		0.330	0.250	0.090	0.005K	0.029
72/12/03	09 45		0.430	0.100K	0.029	0.005K	0.010
73/01/07	09 20		0.660	0.100K	0.008	0.005K	0.011
73/02/04	08 15		0.240	0.700	0.067	0.013	0.037
73/03/04	09 31		0.580	0.680	0.056	0.008	0.065
73/04/08	08 15		0.500	0.420	0.040	0.011	0.015
73/04/22	10 07		0.440	0.305	0.021	0.005K	0.015
73/05/06	08 40		0.350	0.160	0.020	0.006	0.010
73/05/20	07 25		0.336	0.310	0.032	0.008	0.022
73/06/03	08 35		0.260	0.810	0.039	0.010	0.015
73/07/07	09 55		0.460	0.230	0.044	0.007	0.015
73/09/09	09 00		0.400	1.140	0.099	0.056	0.165

K VALUE KNOWN TO BE LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

361001 LS3A10D1
42 09 00.0 079 24 00.0
BALL CREEK
36 7.5 CHAUTAUQUA
T/CHAUTAUQUA LAKE
ST HWY 17J HROG .25 MI SW OF STOW
11EPALES 2111204
4 0000 FEET DEPTH

W O	DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
	72/11/05	09 35		0.280	0.300	0.052	0.010	0.017
	72/12/03	09 53		0.470	0.480	0.046	0.007	0.020
	73/01/07	09 54		0.700	0.140	0.005K	0.007	0.015
	73/02/03	09 30		0.560	0.290	0.011	0.008	0.025
	73/03/04	09 58		0.600	0.620	0.040	0.017	0.150
	73/04/04	08 37		0.460	0.190	0.016	0.009	0.010
	73/04/22	09 25		0.409	0.280	0.013	0.005K	0.010
	73/05/04	08 32		0.250	0.290	0.025	0.006	0.010
	73/05/20	07 00		0.198	1.250	0.033	0.006	0.010
	73/06/03	08 10		0.134	1.150	0.039	0.008	0.015
	73/07/07	09 35		0.357	0.250	0.019	0.004	0.015
	73/09/04	09 40		0.147	0.390	0.020	0.012	0.025
	73/10/14	09 30		0.042	0.325	0.021	0.007	0.032

< VALUE KNOWN TO BE LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

3610E1 LS3610E1
42 06 30.0 079 22 00.0
GOOSE CREEK
36 7.5 LAKEWOOD
T/CHAUTAUQUA LAKE
ST HWY 17J BRDG .25 MI W OFVUKOTE
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/05	09 27		0.280	0.300	0.069	0.011	0.019
72/12/03	10 01		0.392	0.380	0.047	0.005K	0.017
73/01/07	10 31		0.570	0.280	0.022	0.007	0.021
73/02/03	10 20		0.490	0.140	0.024	0.007	0.025
73/03/04	10 26		0.550	0.620	0.044	0.010	0.105
73/04/08	09 05		0.410	0.230	0.025	0.00A	0.010
73/04/22	09 15		0.240	0.460	0.015	0.005K	0.020
73/05/06	08 25		0.170	0.250	0.014	0.006	0.012
73/05/20	07 06		0.180	0.310	0.017	0.00A	0.010
73/06/03	08 50		0.120	1.690	0.042	0.007	0.020
73/07/07	09 25		0.240	0.420	0.044	0.007	0.020
73/09/09	10 18		0.160	0.540	0.048	0.039	0.060
73/10/14	09 15		0.033	1.050	0.039	0.016	0.057

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

3610F1 L53610F1
42 06 30.0 079 19 00.0
UNNAMED CREEK
36 7.5 LAKEWOOD
T/CHAUTAUQUA LAKE
BRDG IN LAKEWOOD
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/05	09	10	0.450	0.250	0.048	0.025	0.035
72/12/03	10	10	0.570	0.420	0.036	0.018	0.080
73/01/07	10	55	0.700	0.150	0.005K	0.014	0.030
73/02/03	10	37	0.670	0.220	0.011	0.013	0.025
73/03/04	11	00	0.600	0.390	0.031	0.016	0.055
73/04/04	09	33	0.440	0.630	0.033	0.017	0.030
73/04/22	09	05	0.052	0.580	0.015	0.009	0.040
73/05/06	08	17	0.176	1.050	0.028	0.008	0.015
73/05/20	07	00	0.150	2.000	0.052	0.015	0.065
73/06/03	08	10	0.220	1.890	0.044	0.021	0.155
73/07/07	09	10	0.032	0.980	0.100	0.024	0.115
73/09/09	10	50	0.023	3.350	0.540	0.063	0.220
73/10/14	09	00	0.132	1.300	0.027	0.180	0.360

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

3610G1 LS3610G1
42 06 00.0 079 15 00.0
CHADAKOIN RIVER
36 7.5 LAKEWOOD
0/CHAUTAUQUA LAKE
6TH ST BROG IN JAMESTOWN
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/05	08 49		0.143	0.750	0.115	0.018	0.077
72/12/03	10 23		0.130	0.620	0.066	0.009	0.035
73/01/07	11 17		0.160	0.340	0.046	0.010	0.034
73/02/03			0.610	0.200	0.010	0.005K	0.010
73/03/04	11 22		0.320	0.560	0.160	0.017	0.065
73/04/08	10 02		0.168	0.780	0.052	0.010	0.040
73/04/22	11 25		0.140	1.470	0.180	0.020	0.065
73/05/06	13 20		0.037	0.900	0.067	0.016	0.060
73/05/20	08 15		0.063	0.630	0.056	0.023	0.055
73/06/03	09 23		0.024	2.730	0.075	0.021	0.060
73/07/07	11 05		0.105	0.860	0.160	0.092	0.135
73/10/14	11 30		0.085	2.500	0.250	0.017	0.125

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

3610M1 LS3610M1
42 07 30.0 079 18 30.0
DUTCH HOLLOW CREEK
36 7.5 LAKEWOOD
T/CHAUTAUQUA LAKE
ST HWY 17 BRDG NEAR GREENHURST
11EPALES 2111204
4 0000 FEET DEPTH

34

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/05	11 22		0.441	0.250	0.072	0.014	0.019
72/12/03	10 00		0.500	0.160	0.012	0.013	0.021
73/01/07	11 10		0.750	0.100K	0.005K	0.008	0.016
73/02/04	10 45		0.680	0.130	0.012	0.011	0.030
73/03/04	11 15		0.670	0.780	0.056	0.015	0.110
73/04/08	10 00		0.480	0.210	0.018	0.009	0.015
73/04/22	13 10		0.147	0.220	0.014	0.005K	0.015
73/05/06	09 53		0.154	0.670	0.027	0.006	0.010
73/05/20	08 10		0.138	0.440	0.014	0.006	0.015
73/06/03	09 20		0.060	1.800	0.042	0.005K	0.020
73/07/07	10 50		0.120	0.910	0.018	0.008	0.055
73/09/09	11 30		0.240	1.050	0.052	0.011	0.050
73/10/14	11 10		0.010K	0.300	0.017	0.008	0.025

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

3610J1 LS3610J1
42 09 00.0 079 23 00.0
BEMUS CREEK
36 7.5 CHAUTAUQUA
T/CHAUTAUQUA LAKE
BRDG NEAR ORIENTAL PARK
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/05	11 30		0.200	0.250	0.078	0.005K	0.010
72/12/03	09 50		0.290	0.350	0.036	0.005K	0.009
73/01/07	10 50		0.530	0.130	0.005K	0.005K	0.010
73/02/04	10 30		0.470	0.310	0.012	0.005K	0.020
73/03/04	10 40		0.550	0.690	0.220		
73/04/04	09 40		0.340	0.440	0.037	0.007	0.010
73/04/22	11 00		0.310	0.150	0.021	0.005K	0.010
73/05/06	09 45		0.198	0.770	0.025	0.005K	0.005K
73/05/20	08 00		0.210	0.210	0.011	0.005K	0.010
73/06/03	09 10		0.130	0.690	0.022	0.005K	0.010
73/07/07	10 40		0.540	0.240	0.016	0.005K	0.010
73/09/09	11 00		0.150	0.440	0.048	0.013	0.015
73/10/14	10 50		0.300	0.300	0.011	0.005K	0.010

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

3610K1 LS3610K1
42 14 00.0 079 26 30.0
DEWITTVILLE CREEK
36 7.5 CHAUTAUQUA
T/CHAUTAUQUA LAKE
ST HWY 17 BRDG IN DEWITTVILLE
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/05	10 38		0.470	0.200	0.058	0.006	0.014
72/12/03	09 45		0.700	0.300	0.015	0.005K	0.016
73/01/07	10 20		1.140	0.100K	0.005K	0.005K	0.011
73/02/04	10 00		0.885	0.270	0.005K	0.005K	0.020
73/03/04	10 25		0.660	0.430	0.029	0.015	0.110
73/04/08	09 15		0.690	0.150	0.016	0.006	0.015
73/04/22	10 45		1.060	0.100K	0.011	0.005K	0.010
73/05/06	09 20		0.650	0.360	0.018	0.005K	0.015
73/05/20	07 48		0.710	0.440	0.022	0.005K	0.005K
73/06/03	08 55		0.460	2.730	0.065	0.005K	0.025
73/07/07	10 25		1.080	0.230	0.014	0.005K	0.030
73/09/09	10 20		0.019	0.210	0.078	0.008	0.015
73/10/14	10 30		0.890	0.400	0.013	0.006	0.010

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/27

361050 PR361050 P003935
44 06 30.0 079 19 00.0
LAKEWOOD
36 7.5 LAKEWOOD
D/CHAUTAUGUA LAKE
CHAUTAUGUA LAKE
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/01/10	08 00								
CP(T)- 73/01/10	15 00		0.770	18.000	1.040	2.100	4.500	0.775	
73/02/23	08 00								
CP(T)- 73/02/23	15 00		0.525	22.000	2.100	2.500	5.300	0.613	0.830
73/03/29	09 00								
CP(T)- 73/03/29	15 00		0.860	15.400	1.050	1.700	3.700	1.010	1.140
73/04/26	08 00								
CP(T)- 73/04/26	14 00		0.390	21.000	3.000	2.500	5.000	0.594	
73/05/31	08 00								
CP(T)- 73/05/31	15 00		0.620	20.000	2.700	2.200	4.500	0.781	0.816
73/06/28	08 00								
CP(T)- 73/06/28	15 00		0.240	25.000	7.700	2.700	4.950	0.538	0.734
73/07/31	08 00								
CP(T)- 73/07/31	15 00		0.080	14.700	6.700	2.400	3.000	0.588	0.513
73/08/31	09 00								
CP(T)- 73/08/31	15 00			30.000		3.700	5.600	0.450	0.489
73/10/01	09 00								
CP(T)- 73/10/01	15 00		0.060	29.700	20.000	3.200	6.300	0.348	0.450
73/10/31	08 00								
CP(T)- 73/10/31	15 00		0.480	17.500	3.380	2.100	3.500	0.744	0.414
73/11/30	14 00		0.460	15.500	0.890	1.320	3.150	0.975	0.613
74/01/29			1.200	8.500	0.050	1.040	1.450	0.130	0.135
74/02/28	07 00								
CP(T)- 74/02/28	14 00		1.090	11.000	1.200	1.200	5.700	0.931	0.829

STORET RETRIEVAL DATE 74/11/27

341051 PR361051 P001300
42 15 00.0 079 30 00.0
MAYVILLE
36 7.5 HARTFIELD
D/CHAUTAUGUA LAKE
CHAUTAUGUA LAKE
11ERALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/01/18	09 00		1.300	18.000	3.600	2.400	3.300	0.256	0.100
73/02/23	13 00		0.700	34.000	7.560	3.900	7.950	0.190	0.200
73/03/21	08 00		1.700	10.500	0.240	0.960	1.450	0.265	0.300
73/04/18	08 00		0.920	21.000	2.300	2.900	4.300	0.165	0.200
73/05/16	08 00		0.860	17.500	1.900	2.400	3.200	0.155	0.190
73/06/20	08 00		0.370	14.300	2.100	2.500	3.600	0.180	0.200
73/07/18	08 00		0.120	29.000	7.800	4.100	5.750	0.150	0.165
73/08/22	08 30		0.470	15.000	2.060	1.520		0.195	0.180
73/09/19	08 00		0.100	17.000	12.800	3.600	4.950	0.150	0.150
73/10/17	08 00		0.070	36.000	14.000	4.200	6.000	0.145	0.150
73/11/21	08 30		0.520	17.000	3.640	1.900	2.700	0.155	0.150
73/12/12	08 00		1.200	17.500	2.100	1.900	3.100	0.190	0.195
74/01/09	08 30		0.800	16.800	3.510	2.080	3.080	0.155	0.180

STORET RETRIEVAL DATE 74/11/27

361052 PR361052 P005000
42 12 30.0 079 28 00.0
CHAUTAUGUA INST
36 7.5 CHAUTAUGUA
D/CHAUTAUGUA LAKE
CHAUTAUGUA LAKE
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
72/12/20	11 00								
CP(T)-			0.920	3.360	0.250	0.580	0.820	0.232	0.336
72/12/20	16 00								
73/01/15	11 00								
CP(T)-			0.600	6.500	0.430	1.100	2.100	0.282	0.300
73/01/15	16 00								
73/02/27	11 00								
CP(T)-			0.610	6.500		1.130	2.300	0.059	0.250
73/02/27	16 00								
73/03/27	11 00								
CP(T)-			0.910	4.200	0.180	0.450	1.100	0.146	0.500
73/03/27	16 00								
73/05/17	11 00								
CP(T)-			0.380	2.400	0.380	0.735	1.500	0.350	0.522
73/05/17	16 00								
73/08/21	11 00								
CP(T)-			0.378	33.000	14.300	4.100	6.400	0.740	0.650
73/08/21	16 00								
74/03/07	10 00								
CP(T)-			1.640	2.000	0.100	0.360	0.410	2.300	0.997
74/03/07	15 00								
72/03/08	10 00								
CP(T)-			1.160	2.800	0.140	0.350	0.660	0.463	0.997
74/03/08	15 00								
74/03/14	10 00								
CP(T)-			1.040	2.100	0.110	0.430	0.600	0.341	0.709
74/03/16	10 00								